

**SEMICONDUCTOR FABRICATION METHODS AND APPARATUS****Abstract of the Invention**

Methods and apparatus for fabricating and cleaning in-process  
5 semi-conductor wafers are provided. An in-process wafer is placed within a  
closed chamber. A reactant gas is incorporated in a liquid solvent to form a  
"reactant mixture" that is capable of reacting with photoresist material (or other  
material) on a wafer surface to facilitate removal of the material from the wafer  
surface. The reactant mixture is condensed on one or more of the in-process  
10 wafer surfaces to form a thin film on the surface(s) of the wafer. The solvent in  
the reactant mixture acts as a transport medium to place the reactant gas on  
the wafer surface. The reactant gas is then able to react with the photoresist  
material (or other material) on the in-process wafer surface to effect removal the  
material. Following reaction of the reactant gas with the photoresist, the thin  
15 film of reactant mixture is removed from the wafer surface by flash heating,  
rinsing, draining, or other suitable means.